REMARKS

Claims 1-44 are pending in the present application. Claims 11-22 and 33-44 have been withdrawn in response to an earlier restriction requirement. Therefore, claims 1-10 and 23-32 are currently under consideration. Claims 1 and 23, and the abstract, are amended by this amendment. No new matter is added by the amendments, which are supported throughout the specification and figures. In particular, the claim amendments are supported in the specification at least at page 7, lines 7-9. In view of the amendments and the following remarks, favorable reconsideration of this case is respectfully requested.

The specification is objected to because the abstract includes more than one paragraph. The abstract is amended herein to include only one paragraph, and the amended abstract falls within the word count limit. Therefore, it is respectfully submitted that the abstract complies with the rules, and it is therefore requested that the objection be withdrawn.

Claims 1, 2, 5-10, 23, 24, and 27-32 are rejected under 35 U.S.C. 102(b) as being unpatentable over United States Patent No. 5,615,352 to Jacobson et al. (hereinafter referred to as Jacobson). Applicants respectfully traverse.

Claim 1 relates to a method for data distribution that includes, *inter alia*, distributing logical addresses among an initial set of storage devices so as provide a balanced access to the devices, transferring the data to the storage devices in accordance with the logical addresses, and adding an additional storage device to the initial set, thus forming an extended set of the storage devices comprising the initial set and the additional storage device. The method of claim 1 also includes redistributing the logical addresses among the storage devices in the extended set so as to cause a portion of the logical addresses to be transferred from the storage devices in the initial set to the additional storage device. In amended claim 1, the redistributing is performed ***while***

maintaining the balanced access and ***while maintaining the same logical addresses for the logical addresses in the initial set of storage devices that are not transferred to the additional storage device.***

The Examiner asserts that Jacobson discloses all of the features of claim 1. However, Jacobson does not disclose or suggest that the redistributing is performed while maintaining the same logical addresses for the logical addresses in the initial set of storage devices that are not transferred to the additional storage device. Jacobson apparently discusses how to distribute all logical addresses across a given set of disks and then, if a disk is added, distributing the logical addresses again. Jacobson indicates that the addition of storage space results in a "remapped" storage area (Jacobson; col. 3, lines 5-8). Jacobson further indicates that "[t]he remapping of the second virtual space to the first is continuously modified to reflect the expansion of the RAID areas within the virtual storage space" (Jacobson; col. 3, lines 11-13). The remapping discussed in Jacobson does not disclose or suggest the feature of the present invention of maintaining the logical addresses for the logical addresses that remain with the original storage devices. The remaining section of Jacobson cited by the Examiner (Office Action; page 3, sect. 9, part (d)) as disclosing the feature in the unamended claim apparently discloses creating a post-map which may be kept as a table or generated by equations (Jacobson; col. 13, lines 53-62).

In contrast, the present invention teaches how to do add additional storage with a minimal transfer of data, and while maintaining load balance. The present specification discloses transferring only the data which will reach the new disk after the additional storage space is added and the load is balanced, without moving other data in the system. Jacobson does not do this, but instead rearranges the entire address space. The present invention avoids rearranging the entire address space by moving some addresses to the new space, while leaving other addresses

in their original position. The present invention therefore provides a more efficient method for reassigning logical addresses, and reduces the opportunity for error, by preserving load balance while minimizing the migration of data in the new distribution. There is no disclosure in any of the cited sections of Jacobson of performing load balancing and redistributing, while maintaining the same logical addresses for the logical addresses in the initial set of storage devices that are not transferred to the additional storage device. Therefore, for at least this reason claim 1 is allowable over Jacobson.

Claims 1, 2, and 5-10 depend from claim 1 and therefore these claims are allowable for at least the same reasons claim 1 is allowable.

Amended claim 23 includes a feature similar to that discussed above in regard to amended claim 1, and therefore, for at least the same reasons claim 1 is allowable, claim 23 is also allowable.

Claims 24, and 27-32 depend from claim 23 and therefore these claims are allowable for at least the same reasons claim 23 is allowable.

Claims 3, 4, 25, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Jacobson and further in view of "Consistent Hashing and Random Trees: Distributed Caching Protocols for Relieving Hot Spots on the Worldwide Web," by Karger et al., in the Proceedings of the 29th ASM Symposium on Theory of Computing, Pages 654-663 (hereinafter referred to as Karger). Applicants respectfully traverse.

The addition of Karger fails to cure the critical deficiency discussed above as regards Jacobson applied against claims 1 and 23, et al.. Therefore, since claims 3 and 4 depend from claim 1, these claims are allowable for at least the same reasons claim 1 is allowable. Similarly, since claims 25 and 26 depend from claim 23, these claims are allowable for at least the same

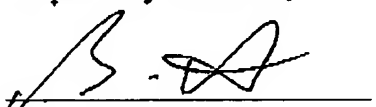
reasons claim 23 is allowable.

Additionally, there is no motivation to combine Jacobson and Karger. The Office Action asserts that it would have been obvious to combine the references "in order to prevent requiring a central server to redistribute a completely updated table to all the machines each time a new machine is added to the network" (Office Action; page 5, lines 24-26). However, this merely states an advantage of the present invention, without providing a motivation for one with skill in the art and aware of Jacobson to look to Karger to combine the teachings provided therein. The present invention provides: (1) a modified distribution of addresses; (2) minimal migration of data in the new distribution; and (3) preservation of balance. This is not known in the art and represents a non-trivial development. Applicants respectfully submit that the motivation to combine the references results from improper hindsight reasoning and therefore for at least this additional reason the rejection should be withdrawn.

In view of the remarks set forth above, this application is believed to be in condition for allowance which action is respectfully requested. However, if for any reason the Examiner should consider this application not to be in condition for allowance, the Examiner is respectfully requested to telephone the undersigned attorney at the number listed below prior to issuing a further Action.

Any fee due with this paper may be charged on Deposit Account 50-1290.

Respectfully submitted,



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